



Arab Academy

for Science , Technology and Maritime Transport



The International Maritime Transport
and Logistics Conference

“MARLOG 13”

**Towards _____
Smart Green Blue
Infrastructure**

3-5 March 2024 - Alexandria, Egypt





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**Institute of Shipping Economics and
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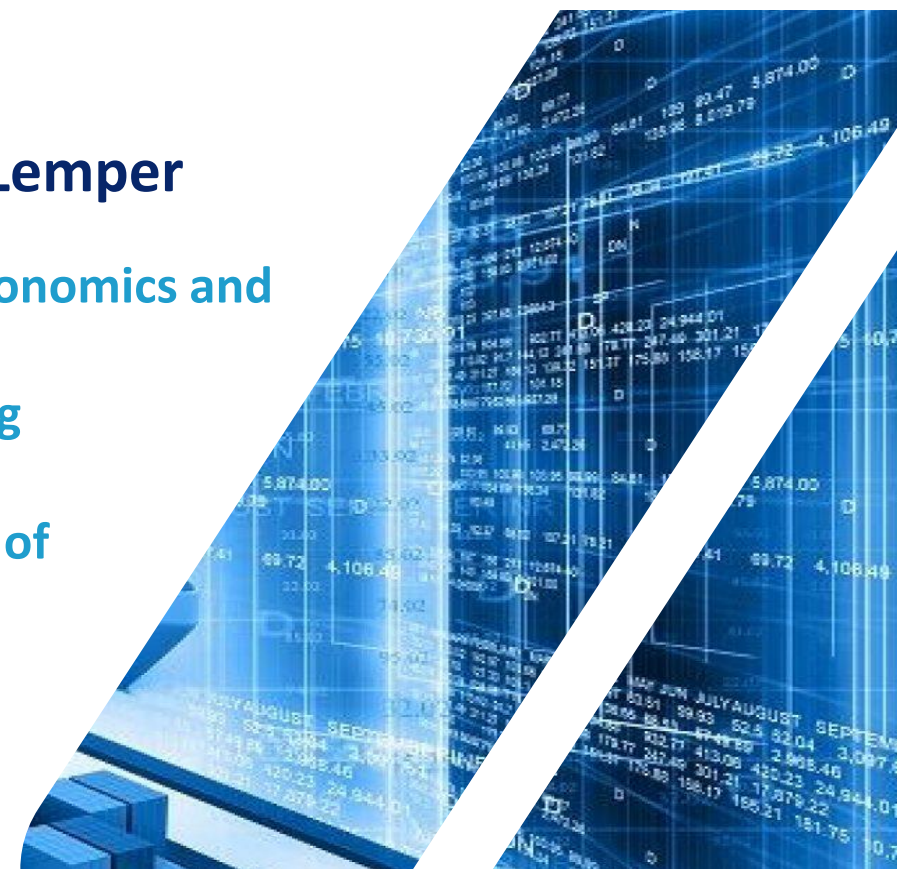
GSTTA – Global Shipping

Think Tank Alliance

Bremen City University of

Applied Sciences

**Seaports' Contribution Towards
Sustainable Development -
Potentials and challenges**



Seaports' Contribution Towards Sustainable Development - Potentials and challenges

Prof. Dr. Burkhard Lemper

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Agenda

Introduction

1

Activities of the Port Administrations

2

Promoting Sustainability in the Port Area

3

Enabling Sustainable Maritime Supply Chains

4

**Seaports for the Sustainable Transformation
of the Economy**

5

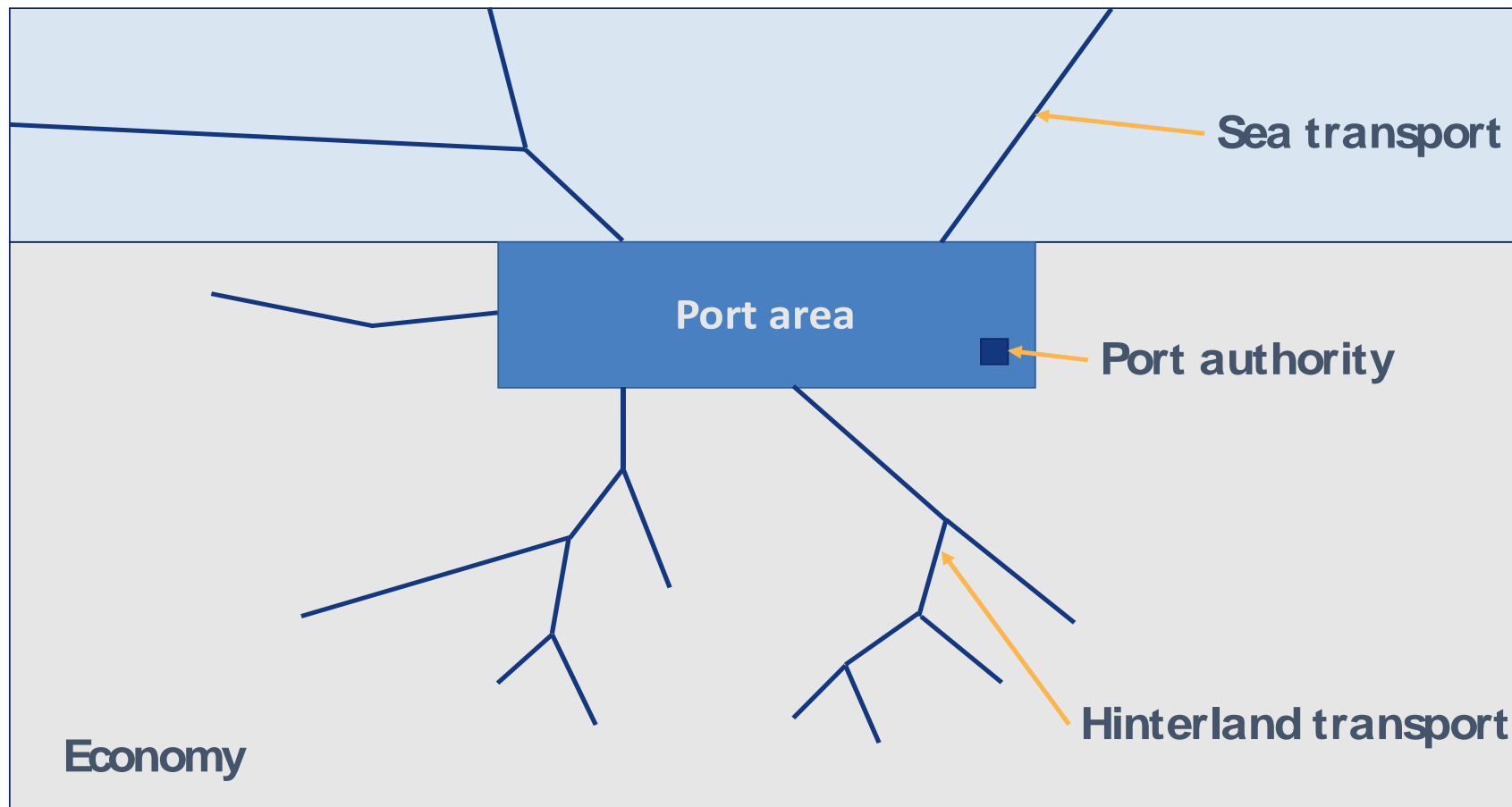


Introduction

- The change initiated by the international commitment to a more sustainable economy, which is reflected in the climate goals of the Paris Agreement and the United Nations' global sustainability goals, is also affecting ports
- Sustainable Development Goals (SDG) of the United Nations on
 - ecological sustainability,
 - social sustainability and
 - economic sustainability
- 17 sustainability goals defined, broken down into 169 specific target indicators - to be achieved by 2030 at the latest
- Due to the central role of ports in global supply chains and thus for the respective national economies, they must not only adapt to this change towards a more sustainable way of doing business, but can and must also play a decisive role in shaping it.



4 levels at which seaports can promote sustainable development



Agenda

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1

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Administrations/Authorities**

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3

Enabling Sustainable Maritime Supply Chains

4

**Seaports for the Sustainable Transformation
of the Economy**

5



Activities of the Port Administrations/Authorities (1)

- In large European and American seaports, the landlord model dominates today
- port administrations are only responsible for the construction and maintenance of the infrastructure and lease the areas to terminal operators
- port administrations themselves are therefore not directly involved in the transport chains
- Only limited directly attributable GHG emissions
 - Scope 1: direct emissions like heating of buildings, own vehicles
 - Scope 2: indirect emissions from electricity consumption (not from renewable energy sources)
 - Scope 3: indirect from activities upstream and downstream of the actual business, such as business trips or employee commuting



Activities of the Port Administrations/Authorities (2)

- First step: Systematic monitoring and recording of GHG emissions
- Second step: introduction of measures
 - Scope 1: using more modern, efficient technologies (e.g. heat pumps or solar thermal energy) and using electric vehicles in own fleet
 - Scope 2: buying electricity from renewable energy sources or operation of own photovoltaic or wind energy plants
 - Scope 3: incentivizing low-emission means of transportation for commuting and business trips; enable employees to work from home in order to reduce the total commuting distances
- Additional options:
 - In resource-intensive contracts (e.g. construction) criteria like GHG-emissions or recycling rates could be used for selection



Agenda

Introduction

1

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Administrations/Authorities**

2

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3

Enabling Sustainable Maritime Supply Chains

4

**Seaports for the Sustainable Transformation
of the Economy**

5



Promoting Sustainability in the Port Area

- Port administrations can indirectly influence the sustainability of the activities of terminal operators and other companies in the port area through their role as lessors of port areas
 - include sustainability goals in the bidding process when leasing port areas
 - Implement air emission inventories in port areas to analyse and document the correlations between port activities and emissions
 - provision of shore power supply, if necessary in combination with incentive systems for their use, can minimize the emissions caused in port by auxiliary diesel generators onboard vessel
 - port authorities can impose more restrictive regulations on terminal operators regarding emissions from cargo handling equipment
 - Noise reduction through incentives based on ESI Noise Score



Agenda

Introduction

1

**Activities of the Port
Administrations/Authorities**

2

Promoting Sustainability in the Port Area

3

Enabling Sustainable Maritime Supply Chains

4

**Seaports for the Sustainable Transformation
of the Economy**

5



Enabling Sustainable Maritime Supply Chains (1)

- Support ships with propulsion systems for alternative fuels such as methanol or ammonia by offering respective bunker facilities to solve the hen-and-egg problem
- Development of “Green Corridors” with partner ports offering the same services and incentives to decarbonize maritime trade
- Encouraging the sustainable return to the circular economy by setting up suitable port reception facilities for waste, even if parts of it may be discharged at sea according to MARPOL Annex V
- Ports can implement incentive systems to encourage the shipping companies and also e.g. hinterland service providers to use technological or operational measures to reduce emissions of air pollutants or noise
- Certification systems such as the "Environmental Ship Index" already exist and can be applied to decide for bonuses or penalties



Enabling Sustainable Maritime Supply Chains (2)

- Optimizing ship calls by
 - reducing waiting time outside the port and
 - Planning a just-in-time arrival
- Aim: ships can approach a port at a lower speed, which reduces overall fuel consumption and cuts emissions along the maritime transport chain
- Influence the hinterland modal split towards more sustainable means of transport
 - Improving the handling of inland vessels (special berths) and making inland shipping more attractive
 - Implementing requirements for increased shares of more climate-friendly hinterland transport modes when awarding new leasing contracts



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3

Enabling Sustainable Maritime Supply Chains

4

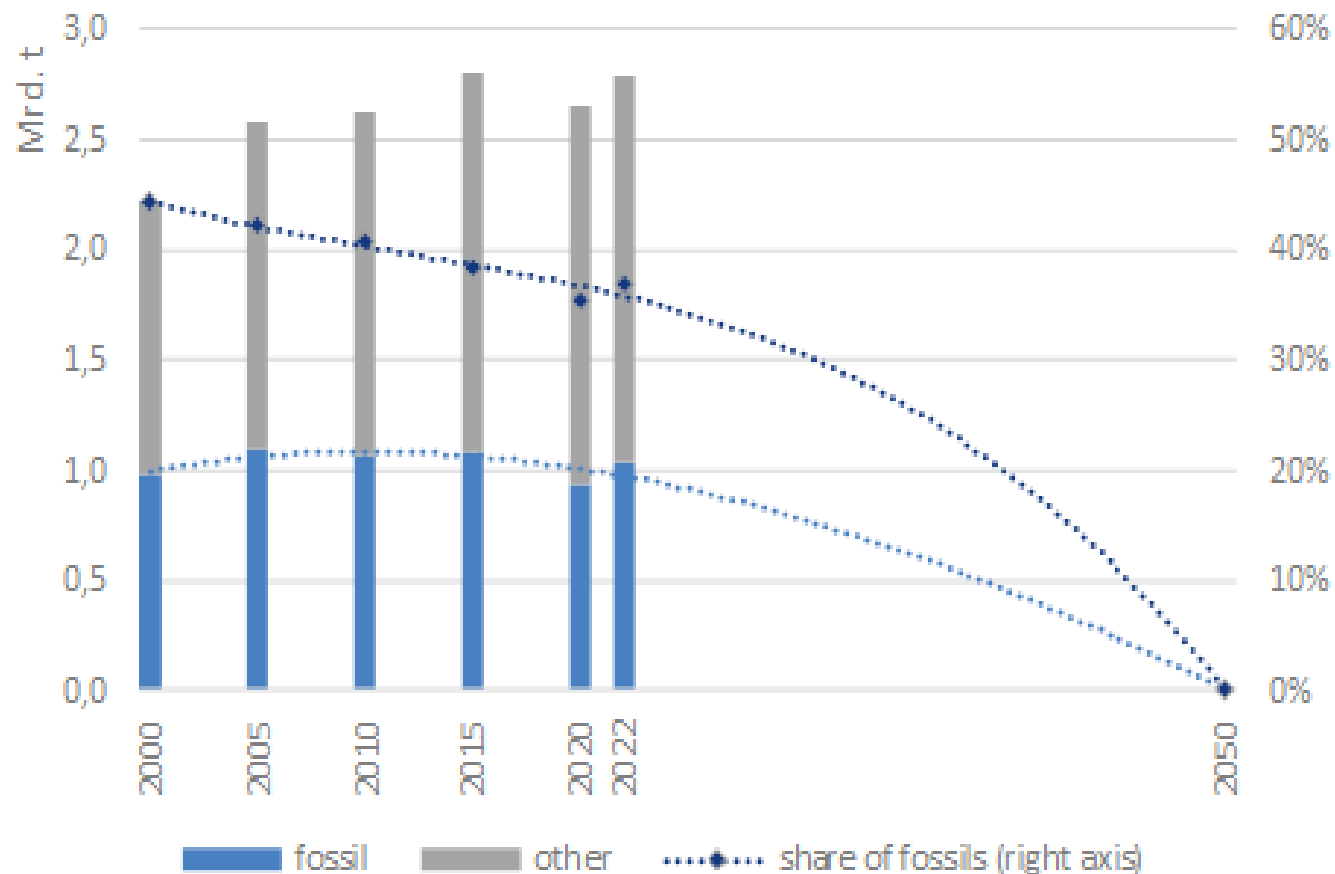
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of the Economy**

5



Seaports for the Sustainable Transformation of the Economy

- Expected decline in handling fossil fuels leads to a change in the cargo handling structure and therefore also of the required port infrastructure
- fossil fuels handled in European seaports has stagnated at around 1 billion tons since 2000



Source: ISL based on Eurostat



Seaports for the Sustainable Transformation of the Economy

- Further reduction of fossil fuels in port handling is expected – down a complete stop by 2050
- Handling capacities for about 1 billion tons of dry and liquid bulk can and have to be reused – import of other, renewable energy sources (especially liquid, hydrogen-based substances)
- Ports will also play an important role in a global circular economy, which is a prerequisite for resource-conserving economic activity
- Ports are important for the expansion of offshore wind energy

The shift towards a more sustainable economy will also create new cargo potentials that ports must keep in mind in their strategic development and land use planning

Summary

- Ports/Authorities have only limited potential to directly reduce GHG-emissions
- They can influence sustainability in the port area and along the maritime transport chains by giving incentives or applying more restrictive regulations to shipping companies, terminal operators or hinterland transport service providers
- Ports can actively optimize ship calls to reduce waiting times for ships outside the ports and thereby reduce emissions
- Despite structural changes in international cargo flows and especially reduced volumes of fossil fuels, ports have the opportunity to profit from new businesses related to renewable energy sources – import/export of carbon neutral fuels or handling of wind energy components





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Thank You

